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# Guyana

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NATIONAL INTELLIGENCE SURVEY

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Transportation and  
Telecommunications

## NATIONAL INTELLIGENCE SURVEY PUBLICATIONS

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# guyana

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# Transportation and Telecommunications

## A. Appraisal (C)

The limited transportation facilities of Guyana are confined chiefly to the coastal lowland area, particularly in the vicinity of Georgetown, the country's commercial center and only major port (Figure 5). A sparse population has not warranted expanding communications in the difficult terrain of the interior. Inland waterways and civil air transport are the only means of access to large parts of the country. Telecommunications are significant in their role of tying together all areas of the nation, particularly by means of the radiotelephone network.

Waterways provide the only surface transportation connections with adjacent countries. The boundary with Surinam and large portions of the boundary with Venezuela are formed by navigable streams. Inland and coastal shipping are the principal means of transportation; the major rivers are navigable by small oceangoing vessels for up to 100 miles inland.

Rail transportation is of minor importance. The two unconnected lines total but 103 miles, and one of the lines, 18 miles long, will probably be abandoned in 1975. The lines do not compete with other transportation modes but serve in a limited sense to complement highway and waterway transport.

The highway system, underdeveloped and poorly integrated, is inadequate. Large areas are virtually roadless, and, because of low design standards, most routes are incapable of supporting any increases in traffic. However, highway transport does provide short-haul services between agricultural areas and marketplaces and essential feeder services between interior mines and timber-producing areas and inland waterway facilities.

The importance of civil aviation has grown steadily. Development of mining regions in mountainous central Guyana and the cattle industry in tropical grassland grazing areas, where some settlements were formerly supplied only once or twice a year via jungle trail, has greatly increased with the introduction of air transportation. Although most of the civil air activity is concentrated in the Georgetown area, airfields are situated in almost all parts of the country.

Georgetown is also the center of telecommunication (telecom) activities; all of the country's radiobroadcast and international facilities are here. The limited needs of government and private enterprise are adequately met. Wire and radio-relay networks radiate from the capital to other important localities. The remaining area is totally dependent on scattered fixed and mobile radio facilities. The most important medium is the domestic radiocommunication network, although the radio-relay network handles a greater volume of traffic.

Administration of transportation and telecommunications is accomplished by subordinate organizations of the Ministry of Works and Communications. Improvements to the telecom system are underway, and a large-scale program of highway development and improvement is being implemented. Planned improvements to other transport media are minor.

## B. Strategic mobility (C)

The support of military operations, except in the coastal lowlands, would be difficult. Depths in the tidal reaches of the important rivers would allow the passage of oceangoing vessels carrying military supplies and equipment across the coastal belt, and, in some instances, the rivers would permit military landing craft to penetrate farther inland. Except for the Georgetown-Skeldon and Georgetown-Linden highways, most roads are in poor condition and would be unable to support sustained military traffic. The two short unconnected single-track rail lines would also be inadequate in military operations. There are no international connections via railroad or highway. Georgetown, the only major port, is adaptable to military use, but access would be restricted by a bar at the mouth of the Demerara River. The only ship of 1,000 g.r.t. or over in the Guyana merchant marine is a 46-year-old converted tanker that has a service speed of 10 knots.

Four of Guyana's 102 airfields have paved runways, but only Timehri International Airfield could support sustained jet craft operations. The two Caribous and

four DC-3's of the Guyana Airways Corporation could be used for reconnaissance, search and rescue, and minor police functions, but information is not available as to whether the number of civilian Guyanese pilots is adequate to operate the aircraft.

The telecom system could provide limited support for military operations. However, control facilities are concentrated in and around Georgetown, and vulnerability in the area is high.

### C. Railroads (C)

The railroads, totaling 103 route miles and consisting of two single-track unconnected government-owned lines, play a minor role in the national economy; they make no international connections. The West Coast Railroad, running between Vreed en Hoop and Parika, is an 18-mile 3'6" narrow-gauge common carrier operated by the Transport and Harbors Department of the Ministry of Works and Communications. The second line, 3'0" gage, extends 85 miles from Wismar and Linden on the Demerara River to Ituni. Primarily a mining line, it was originally owned and operated by the Demerara Bauxite Co. (DEMBA), but in July 1971 the government nationalized the company and railroad. The line is now operated by the government under the Guyana Bauxite Company (GUYBAU). The flat topography of both areas presents no restriction to the lines.

GUYBAU employs about 150 people; personnel figures are not available for the West Coast line. Unskilled workers, who are available in adequate numbers, receive some on-the-job training, but there is a shortage of professional and clerical personnel. The level of employee competence is low for the West Coast line and fair to poor for GUYBAU.

Numerous irrigation canals and watercourses in the coastal plain over which the West Coast line operates necessitate a large number of bridges and culverts. The line has 95 bridges, which are primarily of the girder type. Most of the smaller structures are concrete culverts that have reinforced-concrete floors. The longest bridge in Guyana, a combination 770-foot rail-highway open-deck structure, spans the Demerara River between Linden and Wismar on the GUYBAU line.

Both rail lines operate under the absolute manual block system and use the staff or ticket train-control method. Telephone and telegraph provide communications.

The West Coast line uses diesel and gasoline locomotives, which are generally in fair to poor

condition. The diesels are of U.S., British, and Canadian manufacture. The dieselized GUYBAU line has units of U.S. and British manufacture in good condition.

West Coast rolling stock is generally old and in poor condition but is adequate in quantity. Four-axle units predominate among the two-, three-, and four-axle passenger cars, and two-axle wooden units predominate among similarly equipped freight cars. The freight cars have an estimated capacity of 7 short tons. All units have side buffers, center screw couplings, and Westinghouse airbrakes. Much of the equipment is of British manufacture; but some units have been built locally on imported frames, and others were obtained in 1945 from Bermuda when the government railroad there was closed.

GUYBAU rolling stock consists almost entirely of steel ore hoppers of 13 short tons capacity in good condition and equipped with Westinghouse airbrakes.

The following is a 1970 equipment inventory:

	WEST COAST RR.	GUYBAU RR.
Locomotives:		
Diesel	8	37
Gasoline	5	0
Rolling stock:		
Passenger	12	12
Freight	52	646

The West Coast repair facility, in Vreed en Hoop, has locomotive sheds, maintenance shops, and a roundhouse. The facilities are adequate for current requirements, but efficiency is questionable considering the unusually long time required to make repairs (3 months to 1 year for major locomotive repairs). The GUYBAU railroad has adequate terminal facilities; its repair facilities are at Linden.

Fuel for the West Coast line is imported and probably stored at Vreed en Hoop; the water supply is adequate and is also stored at Vreed en Hoop. Data for the GUYBAU railroad are not available.

The position of the railroads in Guyana is tenuous. Service on the 61-mile standard-gage (4'8 1/2") East Coast Railroad, running between Georgetown and Rosignol, was discontinued in June 1972, and the track is being dismantled. Traffic formerly handled on this line now moves by highway.

The West Coast Railroad is in generally poor condition, virtually no maintenance having been accomplished since 1960. The coastal highway in this area is being improved, and upon completion of the work the rail line is to be dismantled, probably by 1975. The GUYBAU line is in good condition and is regularly maintained. Since 1969, facilities in both



Linden and Ituni have been expanded and improved and the line capacity increased.

Most of the business of the West Coast line, which operates at a loss, is passenger traffic; freight movement consists primarily of sugar, rice, forest products, and fuel oil. About nine passenger trains are run daily, primarily to transport workers and over 1,000 school children. Passenger trains are seldom on schedule, and because of inadequate equipment maintenance, an adequate number of cars is not available for service.

The GUYBAU line operates limited common-carrier service but depends primarily upon the movement of ore to river ports. A daily average of 250 freight cars is hauled from Ituni to Linden. Passenger service consists of four trips per week to Ituni and daily runs to nearer points.

The West Coast Railroad uses flat-bottomed 70-pound-per-yard T-section rail in 30- and 45-foot lengths. Ties are locally available and are either creosoted softwood or untreated hardwood spaced at 1,936 per mile. Ballast is burnt earth and crushed seashell, of which there are adequate, easily accessible local supplies. Grades on the lines are almost negligible, the maximum being 0.6%. However, train lengths are restricted by relatively short passing tracks (415 to 745 feet) located at an average distance of 5 miles. The line has a maximum axleload of 12.6 short tons and a minimum radius of curvature of 957 feet and for most of its length is on embankments above flood level. Traffic interruptions may be caused by severe rainfall and seasonal flooding of the entire coastal area.

The GUYBAU railroad also uses 70-pound rail in 30- and 45-foot lengths. Locally procured ties are untreated hardwood and are spaced at an estimated 2,600 per mile; ballast is crushed stone. Grades do not exceed 1.0%, the minimum radius of curvature is 717 feet, and the maximum axleload is 15 short tons.

#### D. Highways (C)

The pattern of Guyana's highway system is characterized by disconnected and dead-end route segments. The greatest density of roads is in the northeastern part of the country, centering on Georgetown, the capital and principal urban area; sparse isolated networks—mainly tracks—in the northwestern, central, and southwestern regions form the remainder of the system. The main road extends along the Atlantic coast from Charity on the Pomeroon River to Skeldon on the Courantyne River. Three unbridged rivers on this road—the Essequibo,

Demerara, and Berbice—are crossed by ferry. Several branch roads extend inland a short distance, but the longest, and only road of significance, is the bituminous-surfaced highway, completed in 1968, from Georgetown to Linden. This road provides access to Timehri International Airfield. The only other road serving the interior is the Bartica-Mahdia road. There are many miles of earth roads in the Rupununi savannas, but they are not connected to the coastal road system.

Guyana has 1,450 miles of roads, including many motorable tracks and a comparatively small number of private roads constructed by mining, agricultural, and timber interests to serve their own needs. Of this total, 580 miles are surfaced; 290 miles are paved, and 290 miles are surfaced with gravel, laterite, or bauxite. The remaining mileage is unsurfaced; 330 miles of the unsurfaced roads have improvements such as grading and drainage, and 540 miles are unimproved tracks. There are no road connections with neighboring countries.

Most roads are either single lane throughout or have some narrow stretches. The best roads, which have 22-foot bituminous surfaces, are the coastal route from Georgetown to Skeldon and the highway from Georgetown to Linden. Basic courses on the bituminous-surfaced roads are either crushed stone, gravel, or bauxite, in general only the above-mentioned bituminous-surfaced roads have shoulders; they are 5 to 8 feet wide. Owing to inadequate maintenance and the adverse effects of rainy weather, many roads are in poor condition. Drainage facilities, especially, are in need of repair.

Information on the total number of highway bridges is not available; however, there are numerous structures on the coastal plain where drainage and irrigation canals abound. Most bridges are 25 feet or less in length and are either of timber-beam, concrete-beam, or concrete-slab construction. There are 15 bridges over 100 feet long, all of which are of steel, reinforced-concrete, or timber construction or combinations of these materials. One of these, a 770-foot single-lane combination rail and highway bridge with a 90-foot lift span, crosses the Demerara River at Linden. Most steel bridges have deck-truss spans. Concrete bridges have either beam or deck-girder spans. Most structures have unlimited vertical clearances. Load capacities are estimated to be from 10 to 20 short tons on the steel and concrete structures, but many of the smaller bridges have capacities of 7 short tons or less. The road system has no tunnels, and there are few fords.

Responsibility for construction and maintenance of the public roads rests with the Roads Division of the Ministry of Works and Communications. However, because of limited financial resources, some major road development projects are being accomplished by a "self-help" plan. Under this plan, labor is furnished by civilian volunteers and the Guyana Defense Force (GDF). The civilian volunteers work for 1 week without compensation except food, lodging, and transportation. Maintenance activities are not performed on a regularly scheduled basis but only as necessary to keep roads open. Maintenance work consists mainly of working the unpaved roads to remove ruts and corrugations and patching potholes in the bituminous roads. Unskilled labor is plentiful, but there is a need for competent technicians and engineers. Construction and maintenance problems arise from the lack of suitable construction materials, chiefly stone and gravel, and the damaging effect of rains upon the poor-quality surfaces. Some rock is available from interior quarries, but the high cost of transporting it to crushing plants near the coast has limited its use. Ample supplies of timber for use in bridge construction are available locally, but bitumen, portland cement, and steel must be imported. Chief sources are the United States, Canada, and the United Kingdom. Available construction equipment, such as bitumen distributors, compactors, bulldozers, and rock crushers, is inadequate for present needs.

The government favors highway development to the interior to encourage economic development in the sparsely settled area. Because of financial difficulties these projects are to be accomplished by the "self-help" plan. A road now under construction between Mahdia and Annai is to join the sparse network of earth roads in the Rupunoni area. It is planned to improve the earth road from Annai to Lethem on the Brazilian border. A planned connection between Linden and the Bartica-Mahdia road west of Rockstone is to provide a through route from Georgetown to Brazil. Clearing of the section between Mahdia and Annai was completed in early 1972. Completion of the road and bridges will be left to the GDF, and civilian volunteers will be assigned to other projects. Future plans and investment in the transport sector are to be determined by the transport planning unit recently established under the Ministry of Economic Development. Loans recently approved by international development organizations for a 3-year development program are to be used for improvement of about 34 miles of roads in the densely populated area west of Georgetown, feasibility studies of about 200 miles of roads, and detailed engineering plans of about 100 miles of roads.

Hindrances to traffic, aside from the many narrow roadways, are five ferry crossings (three on the Charity-Skeldon coastal route), sharp turns, narrow streets, narrow and low-capacity bridges, a few fords, and sharp curves and steep grades on some inland routes. During the rainy seasons most roads are impassable in places or difficult to travel. Roads situated in the low-lying coastal plain are subject to periodic inundation from high tides or flooded rivers. In the dry season excessive dust conditions prevail on the unpaved roads, chiefly on those with earth-clay surfaces.

Guyana has few highway transport firms of any significant size. Most passenger and freight service is provided by owner-operated vehicles. The largest bus and truck firms are located in Georgetown; two companies operate a number of trucks and animal-drawn conveyances over various routes on a nonscheduled basis. The largest bus company offers scheduled services within Georgetown and to nearby areas. A single government-operated highway transport service located in Bartica carries passengers, freight, and mail to interior mining districts. Among the items hauled by trucks are sugar products, rice and other foodstuffs, bauxite, and timber. Traffic is growing but is still light; the greatest volume of vehicular traffic is generated on roads in the coastal region, primarily between Georgetown and New Amsterdam.

In 1970, motor vehicle registrations totaled 22,714 units and covered 18,095 passenger cars, 4,377 trucks, and 242 buses. However, registration figures include many vehicles no longer in service, and the actual numbers in service are considerably less. In general, the condition of motor vehicles is poor. Repair facilities and supplies of spare parts are inadequate. All automotive equipment is imported. Over the last 5 years between 1,300 and 1,700 vehicles per year were imported. The United Kingdom is normally the source of most imports; the remainder come from the United States, West Germany, Canada, France, and Japan.

### E. Inland waterways (C)

Some 3,700 miles of navigable inland waterways provide the major routes penetrating to the mineral and agricultural centers deep in the interior. Freight carried on the waterways consists mainly of sugar, bauxite, manganese, lumber, and rice for export, and imported foodstuffs, machinery and manufactured goods. As in neighboring countries, the inland waterway fleet and facilities are barely adequate for present requirements. Local demands dictate the necessity of improvements and construction of facilities along the waterways.

The principal waterways, the Essequibo, Demarara, and Berbice, and their larger tributaries carry the bulk of the waterway traffic. The inland waterways, largely unimproved natural streams, are well distributed. However, a large part of the total navigable mileage consists of upriver reaches considerably obstructed by natural debris and numerous rapids. Navigation across the coastal lowlands, which extend inland for from 60 to 160 miles, can be achieved on most of the rivers by small oceangoing vessels. Navigation above the coastal lowlands is limited to shallow-draft vessels such as launches and native craft. Although portaging around many impassable rapids and falls is necessary, the streams do afford transport routes into remote areas. Characteristics of principal inland waterways are listed in Figure 1.

A network of shallow irrigation canals is located within the coastal belt; many of the canals are utilized for shipping agricultural products to markets and mills.

The west bank of the Courantyne forms the eastern boundary of Guyana, but the river itself lies within Surinam. Guyana has navigation rights along the waterway, which is navigable by coastal vessels for about 65 miles.

The falls and rapids, which restrict navigation to short reaches on many of the rivers, are the chief traffic interruption factors. Transportation into many regions is accomplished by frequent portages or by shooting the rapids, a practice involving serious hazards to passengers and cargo. The rivers are encumbered with debris, and navigation after dark is not advisable. Increased water levels during the long rainy season from May through August and the shorter period of December and January, according to locale, extend the limits of navigability on many of the rivers and facilitate negotiation of rapids by river steamers and launches. The narrowness of the channels on several of the streams prevents some of the large vessels from turning around; for this reason they go astern for

FIGURE 1. Characteristics of principal inland waterways (C)

NAME	TYPE	NAVI- GABLE LENGTH	SAFE DRAFT		REMARKS
			LW	HW	
		<i>Miles</i>		<i>Fect</i>	
Demerara River.....	Improved stream.....	67	na	18	At high tide maritime vessels can enter the Demerara River and navigate to Linden. Shallow-draft river steamers ascend the river for about 110 miles, and launches navigate to vicinity of mile 136. A new bridge with a vertical lift span crosses the river at Linden; depending on the tide, underbridge clearance varies from 20 to 27 ft. when span is raised.
Berbice River.....	.....do.....	100	7	14	At high tide oceangoing vessels can enter the Berbice and, via a tortuous channel, navigate to Takama. Steamers and launches of 7 ft. draft are able to proceed an additional 70 miles upstream from Takama. Bauxite is barged downstream from Kwakwani to Everton in 350-ton barges.
Waini River, Mora Passage, Barima River, Kaituma River.	Improved streams and passage.	approx. 67	na	na	Navigable depths controlled by bar at mouth of Mora Passage. Ore vessels carrying export manganese from Kaituma navigate the route. Lower Barima River provides connection with Rio Orinoco system of Venezuela.
Essequibo River.....	Natural stream.....	50	na	16.5	Largest river in Guyana. Oceangoing vessels can enter the river at high tide and navigate to point 8 miles above Bartica; smaller coastal vessels can reach Rockstone at mile 70. Native craft navigate throughout lower 310 miles of river.
na Data not available.					

portions of the return trip. Long ore-carrying vessels are especially hindered in negotiating turns upriver.

Structures on the inland waterways consist of a few road and rail bridges. Passenger and vehicle ferries are in operation at crossings near the mouths of the Essequibo, Demerara, and Berbice and at a point 66 miles up the Demerara. Submarine cables are laid across several of the principal rivers in the vicinity of the mouths.

Inland waterway ports consist generally of minor facilities at a number of plantation and mining sites. Much of the inland waterway movement centers on the maritime port of Georgetown and at New Amsterdam, which can easily handle all traffic calling there. Parika, Port Kaituma, Kwakwani, and Springlands are also active inland waterway ports. Parika is a timber-loading port at the mouth of the Essequibo; Port Kaituma specializes in exporting manganese ore via the Port Kaituma, Barima, Mora Passage, and Waini waterways; Kwakwani is a bauxite-shipment facility; and Springlands is the port of entry for goods from Surinam.

The inland waterway fleet is a mixture of publicly and privately owned vessels up to 561 gross register tons in size. For the most part, vessels are old and in need of repair or replacement. The private fleet includes 27 tugs, 60 barges, and about 30 cargo/passenger vessels plus motor and steam launches, ferries, and nine ore lighters. Numerous native vessels ply the upper reaches of the waterways; many are powered by outboard motors. The largest single owner of vessels is the government's Transport and Harbors Department. Its fleet is composed of three ferries (each of 561 gross register tons), 16 cargo/passenger vessels and launches, three tugs, six launches, two dredges, one lighter, and an undetermined number of barges.

Inland waterways are under the control of the Transport and Harbors Department, which is responsible to the Ministry of Works and Communications. Loose regulatory control is exercised over private operators.

The Guyana Government has no long-range plans for development of its inland waterway system. However, the addition of facilities at the main ports and smaller landings is carried out as the need arises; maintenance is performed regularly.

## F. Ports (C)

Guyana has one major and three minor ports; all are natural river ports. Georgetown (Figure 2), the major

port, is situated at the mouth of the Demerara River along the east bank. The three minor ports are Linden, the center of the bauxite industry; New Amsterdam, the commercial port for the surrounding agricultural districts; and Bartica, the port and trading center for the Essequibo River complex. Clearance from the ports is mainly by inland waterway; two wharves at Georgetown are served by rail. The ports are administered by the Transport and Harbors Department; however, most of the wharves are owned by private trading and shipping companies. Georgetown adequately meets normal shipping and receiving requirements, but capability for military use is limited by access restriction caused by a bar at the river mouth.

Georgetown is the center of commercial activities and handles most of the trade for the country. It is the only maritime port of entry and is a transshipment point for small steamers and other river craft. Among the principal exports are sugar, rice, rum, molasses, and bauxite; imports include foodstuffs, beverages, tobacco, manufactured goods, machinery, and refined petroleum products. The port has a small improved harbor with about 1½ square miles of water area open from west through north; some protection is afforded by shoals and groins at the river mouth. Controlling depth over the bar in the approach channel, about 3 miles north-northeastward of the port, is 9 feet at mean low water with a depth of 16 feet at mean high water neaps. At mean high water neaps, ships drawing 18 feet can enter by plowing through the soft, fluid mud. Alongside berths accommodate three small ocean-type cargo vessels, about 10 standard and small coaster-type cargo vessels, one standard coaster-type tanker, and several lighters. The exposed roadstead provides anchorage for large numbers of ocean-type and coaster-type cargo vessels about 13 miles north-northeastward of the harbor. The estimated military port capacity<sup>1</sup> is 3,000 long tons.

The largest drydocking facility is a graving dock with a length on keel blocks of 203 feet. Well-equipped shops can effect above-water repairs to hulls and engines.

<sup>1</sup>The estimated military port capacity is the maximum amount of general cargo—expressed in long tons—that can be unloaded onto the wharves and cleared from the wharf aprons during a period of one 24-hour day (20 effective cargo-working hours). The estimate is based on the static cargo-transfer facilities of the port existing at the time the estimate is prepared and is designed for comparison rather than for operational purposes; it cannot be projected beyond a single day by straight multiplication.

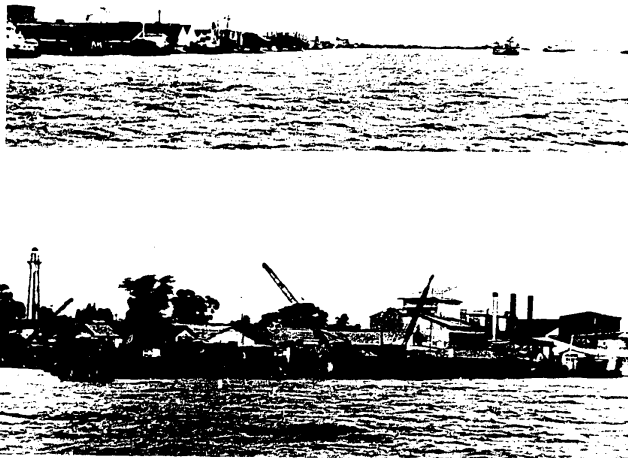


FIGURE 2. Port of Georgetown at the mouth of the Demerara River (U/OU)

#### G. Merchant marine (C)

Guyana has one ship of 1,000 gross register tons (g.r.t.) and over, a government-owned (Transport and Harbors Department) bulk-cargo unit of 2,959 g.r.t. or 3,149 deadweight tons (d.w.t.). This 46-year-old converted tanker has oil-fired boilers and a service speed of 10 knots. Current information is not available on either the types of cargo carried or routes served, but this ship has transported cargo between Guyana and ports in the West Indies and the Gulf of Mexico. Several smaller ships ranging from about 100 to 600 gross tons carry general cargo and passengers in coastal and river traffic. These ships are operated in scheduled service by the Transport and Harbors Department.

#### H. Civil air (C)

Civil aviation provides the only transportation connection, other than waterways, with neighboring countries and is a major means of access to the mining regions of mountainous central Guyana and to the tropical cattle-grazing areas beyond. Guyana Airways Corporation, whose present title was adopted in 1963,

is the country's only scheduled airline. Established in 1938 as British Guiana Airways, Ltd., and privately owned until 1955, at which time it was acquired by the government. The airline, a wholly government-owned corporation with a chairman and board of directors, operates internal scheduled flights from Georgetown to 17 domestic points. Scheduled international services are not operated by Guyana Airways, but international service is provided by eight foreign carriers having scheduled services to 18 cities in 13 countries. Charter service to neighboring countries and islands in the eastern Caribbean is supplied by Guyana Airways and four other small companies operating light aircraft.

An estimated 55 civil aircraft are registered in Guyana. Two de Havilland DHC-4 Caribou and four Douglas DC-3's owned by Guyana Airways, are the only aircraft in the 20,000 pound or greater gross weight category. The airline also operates a few light aircraft. The remaining light aircraft are owned by charter services, aeroclubs, business organizations, and private individuals.

Almost all the 425 personnel engaged in civil aviation activities in Guyana are employed by Guyana

Airways. Civil pilot training activity is limited to training provided by Guyana Airways for its own pilots. In the past, the company had sent pilots to private schools in the United States for pilot training courses.

There are no commercial enterprises devoted solely to the maintenance of light aircraft, but KLAFAIR, a small charter company, does have a limited maintenance capability. Guyana Airways has major DC-3 maintenance facilities at Timehri International (Georgetown).

Civil aviation in Guyana is regulated by the Department of Civil Aviation under the Ministry of Works and Communications. In addition to its regulatory functions the department provides all essential aviation services at the international airfield, including air traffic control, flight information, and rescue coordination services. It is also responsible for overall direction of interior landing sites, including the lighting of amphibious landing areas.

Guyana is a member of the International Civil Aviation Organization (ICAO). Exchange of air services is governed by informal agreements or arrangements with 12 countries; the only formal bilateral civil air agreement is with the United States.

### I. Airfields<sup>2</sup> (C)

The air facilities system in Guyana consists of 102 airfields and two seaplane stations. Of the airfields, 34 are civil, 55 are private and 13 are former airfield sites. The airfield distribution pattern generally follows the Guyana/Brazilian Border, but the only significant concentration is near Georgetown, which represents the area of greatest civil air activity.

Timehri International Airfield, 20 miles southwest of Georgetown, is the principal air facility, handles the greatest volume of air traffic, and is the only designated airport of entry. It can support sustained

operations of aircraft up to and including the C-135 class. Major DC-3 aircraft maintenance facilities are operated by Guyana Airways; the international carriers using this aerodrome have crews available to perform routine maintenance normally associated with en route stops.

Only four airfields have hard-surfaced runways—Timehri International, MacKenzie, Bartica, and Ogle. MacKenzie, second in importance to Timehri International, is not comparable to that airfield in terms of facilities and services available. The runway is in good condition, and there is a small asphalt-surfaced parking apron. Other ancillary services are extremely limited, providing only minor support to the scheduled Guyana Airways light transport operations. Bartica and Ogle are private landing strips used by light aircraft; services and facilities are adequate for operations conducted.

The remaining airfields have natural or gravel-surfaced runways. Of the 89 active fields, about 75% are in fair to good condition and can accommodate light transport aircraft. The 13 sites have been abandoned for several years and are considered unusable.

Neither of the seaplane stations has handling equipment or services. Guyana Airways operates Grumman Goose aircraft out of the Georgetown anchorage, 1 mile southwest of Georgetown on the east bank of the Demerara River, to rivers in the interior. The former seaplane station at Essequibo is inactive, and the associated facilities are in a deteriorated condition.

Airfield maintenance, requiring minimum equipment and unskilled labor, is performed as required at the active airfields. Timehri International has adequate support and service equipment readily available for major maintenance programs.

Information does not indicate any plans for airfield construction, but construction is in progress to strengthen the runway and improve communications, aircraft parking, and support facilities at Timehri International Airfield.

Figure 3 lists characteristics of the leading airfields.

FIGURE 3. Selected airfields (C)

NAME AND LOCATION	LONGEST RUNWAY: SURFACE; DIMENSIONS; ELEVATION ABOVE SEA LEVEL		ESWL*	LARGEST AIRCRAFT NORMALLY SUPPORTED	REMARKS
	<i>Feet</i>	<i>Pounds</i>			
Aishalon..... 2°29'N., 59°19'W.	Earth..... 3,600 x 150 590	14,250	DC 3.....	Civil. Used by domestic airline. No POL.	
Annai..... 3°57'N., 59°06'W.	Gravel..... 3,200 x 150 304	14,250	DC 3.....	Do.	

Footnote at end of table.

FIGURE 3. Selected airfields (C) (Continued)

NAME AND LOCATION	LONGEST RUNWAY: SURFACE; DIMENSIONS; ELEVATION ABOVE SEA LEVEL	ESWL*	LARGEST AIRCRAFT NORMALLY SUPPORTED	REMARKS
	Feet			
Apoteri..... 4°02'N., 58°36'W.	Earth..... 3,800 x 150 300	14,250	DC 3.....	Civil. Used by domestic airline. No POL.
Barimita..... 7°25'N., 60°30'W.	Earth..... 3,500 x 100 560	14,250	DC 3.....	Do.
Bartica..... 6°22'N., 58°39'W.	Asphalt..... 3,960 x 60 284	28,160	DC 4.....	Do.
Good Hope..... 3°52'N., 59°33'W.	Laterite..... 3,500 x 70 350	14,250	DC 3.....	Do.
Imbaimadai..... 5°43'N., 60°17'W.	Earth..... 4,500 x 100 1,650	14,250	DC 3.....	Do.
Kamarang..... 5°53'N., 60°37'W.	Sand..... 3,500 x 150 1,600	14,250	DC 3.....	Do.
Karanambo..... 3°46'N., 59°21'W.	Laterite..... 5,500 x 100 300	14,250	DC 3.....	Do.
Karasabai..... 4°00'N., 59°31'W.	Earth..... 5,000 x 50 400	14,250	DC 3.....	Civil. Used by domestic airline except in rainy season. No POL.
Kato..... 4°39'N., 59°50'W.	Earth..... 3,000 x 100 2,300	14,250	DC 3.....	Civil. Used by domestic airline. No POL.
Lethem..... 3°22'N., 59°47'W.	Gravel..... 6,000 x 150 240	35,500	L382B.....	Do.
Lumid Pau..... 2°24'N., 59°26'W.	Earth..... 3,500 x 150 550	14,250	DC 3.....	Do.
MacKenzie..... 5°58'N., 58°16'W.	Asphalt..... 5,500 x 150 180	28,160	DC 4.....	Do.
Monkey Mountain..... 4°26'N., 59°38'W. 7 miles W. of Wandak	Gravel..... 3,000 x 150 1,700	14,250	DC 3.....	Do.
Ogle..... 6°48'N., 58°06'W. 4 miles E. of Georgetown	Concrete and earth.... 1,500 x 30 10	1,305	Cessna 182....	Civil. One of 3 hard-surfaced runways in Guyana. Avgas available. 300 ft. of runway unusable in wet weather.
Orinduik..... 4°43'N., 60°00'W.	Earth..... 3,500 x 100 1,800	14,250	DC 3.....	Civil. Used by domestic airline. No POL.
Timehri International..... 6°30'N., 58°15'W. 18 miles SSW. of George- town.	Concrete..... 7,430 x 150 95	56,607	Boeing 707....	Civil. International airport. POL available.
Wichabai..... 2°53'N., 59°30'W.	Earth..... 3,000 x 150 420	14,250	DC 3.....	Civil. Used by domestic airline. No POL.

\*Equivalent Single-Wheel loading: Capacity of an airfield runway to sustain the weight of any multiple-wheel landing-gear aircraft in terms of the single-wheel equivalent.

## J. Telecommunications (C)

Guyana has one of the more efficient telecom systems of Latin America, and in level of development it consistently ranks in the top quarter. Trunk routes of the radio-relay and wire networks extend southward from the capital as well as northwest and southeast along the coast. High-frequency (HF) radiocommunication links connect outlying areas, supplementing the radio-relay facilities. The bulk of domestic traffic is carried over the very-high-frequency (VHF) radio-relay network. Georgetown, Linden, and New Amsterdam serve as key traffic-switching centers. Remaining traffic is carried by less important open-wire telephone and telegraph networks and government-operated radiocommunication facilities. Effective international communications are provided by a private commercial company.

The Guyana Telecommunication Corporation (GTC), a government agency, operates the domestic system, including telephone, telegraph, and radio services. Cable and Wireless (West Indies), Ltd. provides international service. A government agency, the Guyana United Broadcasting Company, operates the radio broadcast stations. Special-purpose radiocommunication facilities serve mining, ranching, agricultural, religious and police organizations.

The domestic intercity system consists of interconnected VHF radio-relay, open-wire, cable, and HF radiocommunication networks. The 12-channel radio-relay network linking Georgetown with Charley, Bartica, Linden, Kwakwani, New Amsterdam, and Skeldon provides telephone, telegraph, and telex service. Telegraph and telephone wire networks are operated separately, each covering about 350 miles. About 16,000 telephones serve the country, a ratio of 2 per 100 population. The main exchange in Georgetown has 11,000 phone connections and is the center of a new national telecom system being installed by GEC-AEI of the United Kingdom. The first section of a new ultra-high-frequency radio-relay system is in operation, providing direct-distances-dialing (DDDD) between the capital city of New Amsterdam. As part of the program, 200 miles of radio-relay links and 13 relay towers are being constructed, as well as 20,000 new local telephone lines, and 15 new exchanges. Telegraph service, available at 38 offices, has been improved by the installation of teleprinters at important localities. The public HF radiocommunication network serves the interior.

Direct international HF telephone radiocommunications to Surinam are furnished by the Cable and Wireless station in Georgetown. A 32-channel tropospheric-scatter link exists between Georgetown and Port-of-Spain, Trinidad.

There are two radiobroadcast stations. *Radio Demerara* and the National Broadcasting Service; both are located in the Georgetown area. *Radio Demerara* transmits shortwave and mediumwave AM broadcasts, and the National Broadcasting Service transmits on shortwave, mediumwave, and FM outlets. The number of broadcast receivers is estimated to be 257,000, including over 300 sets for community and school use.

Dense forests, swamps, and rugged hilly terrain have curtailed development of an extensive wire line network. Because of the humid climate, tropicalization of all radio and wire equipment is required. Since control facilities are concentrated in Georgetown, this area is the vulnerable link in the system.

Guyana has no capability for producing telecom equipment. Major sources are the United Kingdom

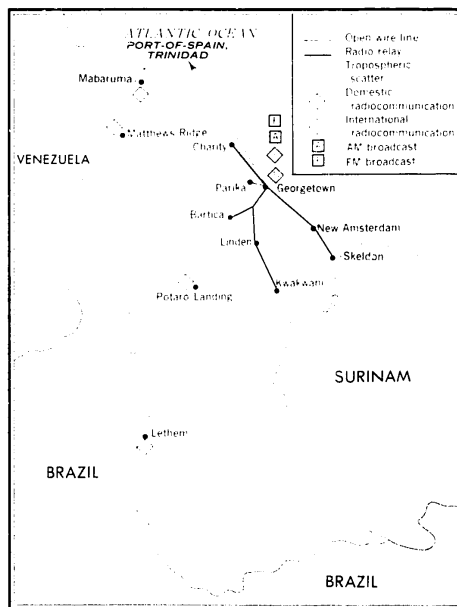


FIGURE 4. General telecom pattern (C)



(General Electric, Murphy-Stellman, and Redifon) and Sweden (Ericsson). Broadcast receivers are supplied by the Netherlands, Japan, and West Germany. Training for telecom employees is provided at the Government Technical Institute at New Amsterdam. Advanced training is available in the United Kingdom and at the Engineering College of Cable and Wireless in Barbados.

Expansion of the local telephone facilities is continuing, and construction of an international switching center in Georgetown is planned as part of the overall national telecom expansion program. A 300-channel radio-relay link is to be built between Georgetown and Surinam, establishing the first high-capacity service between these two countries.

The General telecom pattern is shown in Figure 4.

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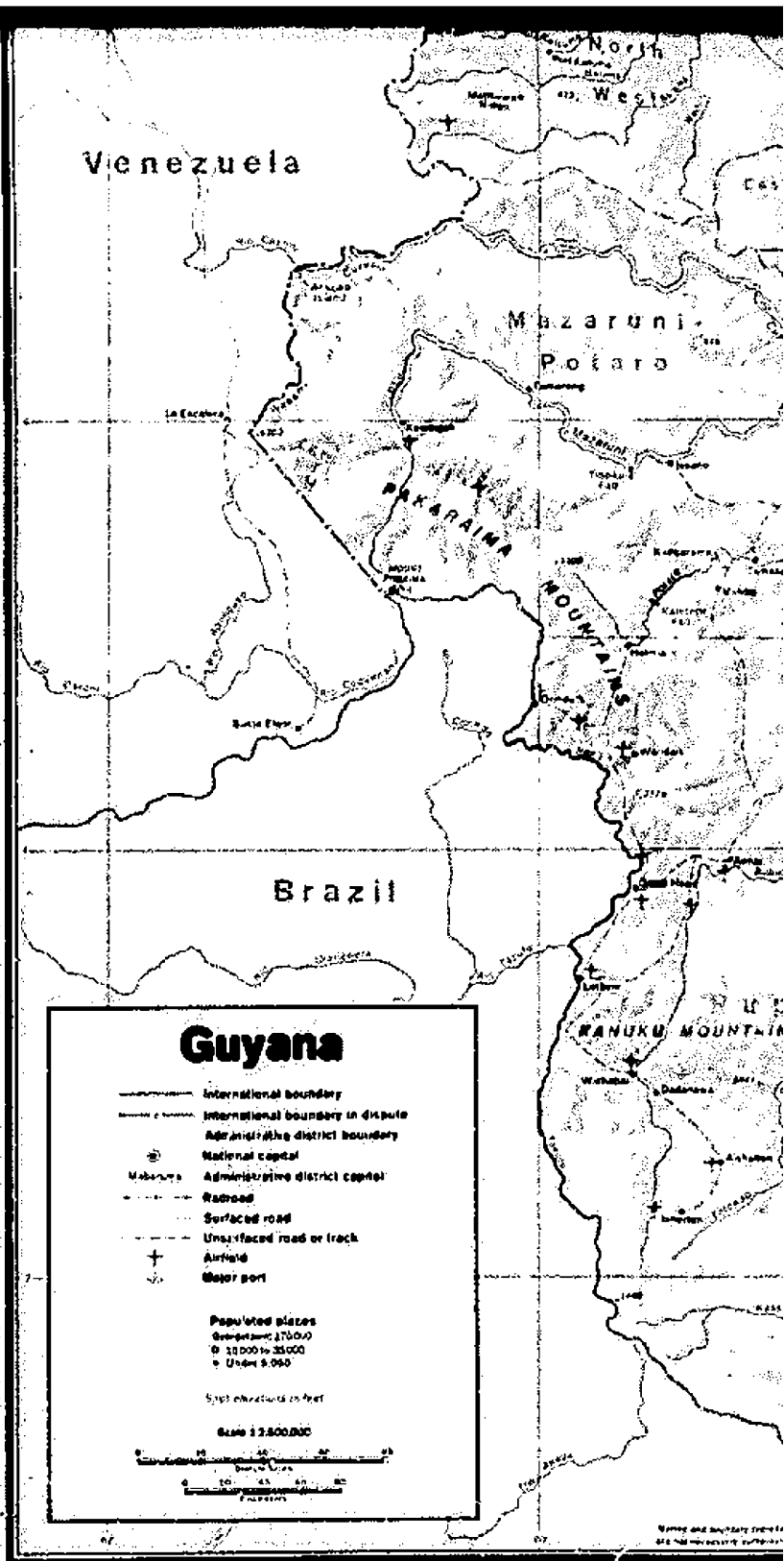
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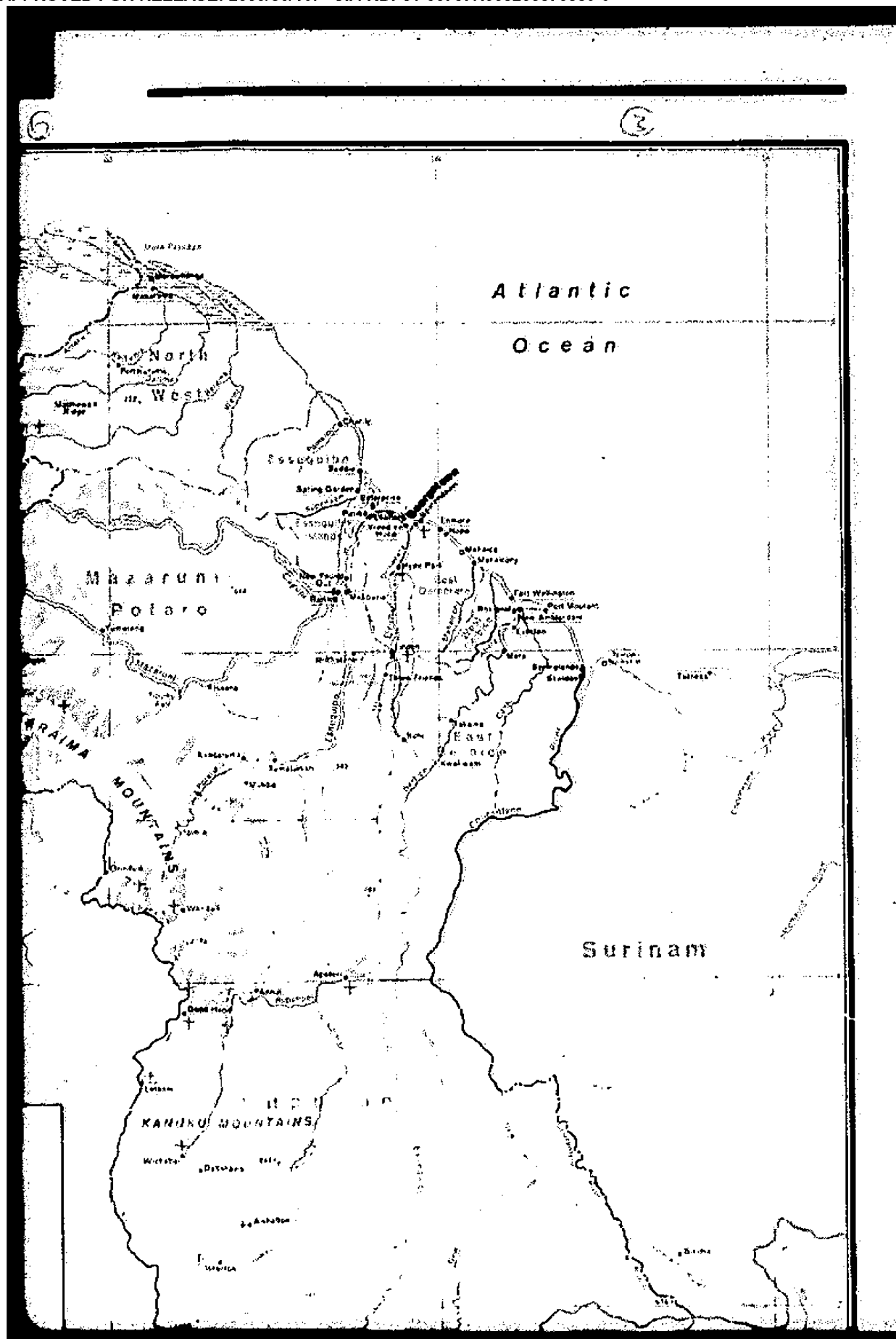
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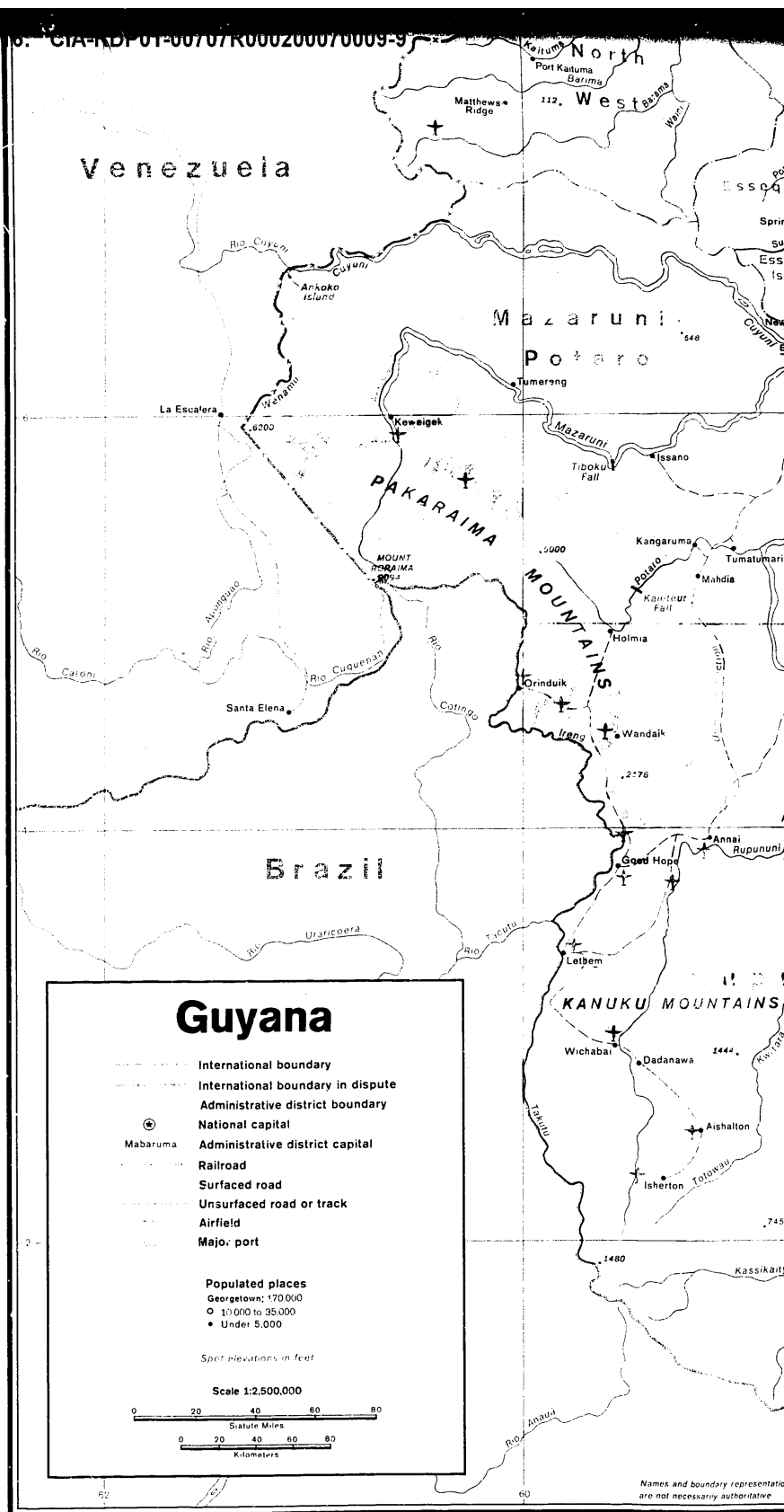
Elevations in feet		
	1000	2000
10 38	41 31	
5 22	38 52	
5 58	38 32	
6 18	37 21	
6 18	22 32	
3 00	29 00	
1 03	28 31	
5 32	37 08	
6 19	38 06	
5 24	37 08	
5 31	37 35	
5 20	38 00	
6 19	38 07	
4 18	38 11	
8 25	39 16	
6 00	35 18	
Airfields		
2 29	38 19	
3 57	39 06	
1 02	38 30	
2 25	40 30	
4 22	38 30	
3 22	38 35	
3 43	38 37	
5 53	38 37	
3 46	38 21	
1 00	38 31	
4 39	38 50	
3 22	38 47	
2 21	38 36	
5 28	38 19	
1 26	38 35	
6 18	38 58	
1 17	38 19	
6 30	38 13	
2 33	38 30	



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	COORDINATES		
	° N	' N	" E
.....	10 39	61	31
.....	5 22	58	52
.....	5 59	58	32
.....	6 16	57	23
.....	6 16	57	32
.....	3 00	59	00
.....	4 03	58	34
.....	5 52	57	08
.....	6 49	58	06
.....	5 54	57	09
.....	5 34	57	55
.....	5 20	59	00
.....	6 19	58	07
.....	6 18	58	11
.....	8 23	59	48
.....	6 00	58	18
Airfields			
.....	2 29	59	19
.....	3 57	59	06
.....	1 02	58	36
.....	7 25	60	30
.....	6 22	58	39
.....	3 52	59	35
.....	5 43	60	17
.....	5 53	60	37
.....	3 46	59	21
.....	1 00	59	31
.....	1 39	59	50
.....	3 22	59	47
.....	2 21	59	26
.....	5 58	58	16
.....	1 26	59	38
.....	6 18	58	06
.....	1 43	60	00
.....	6 30	58	15
.....	2 53	59	30

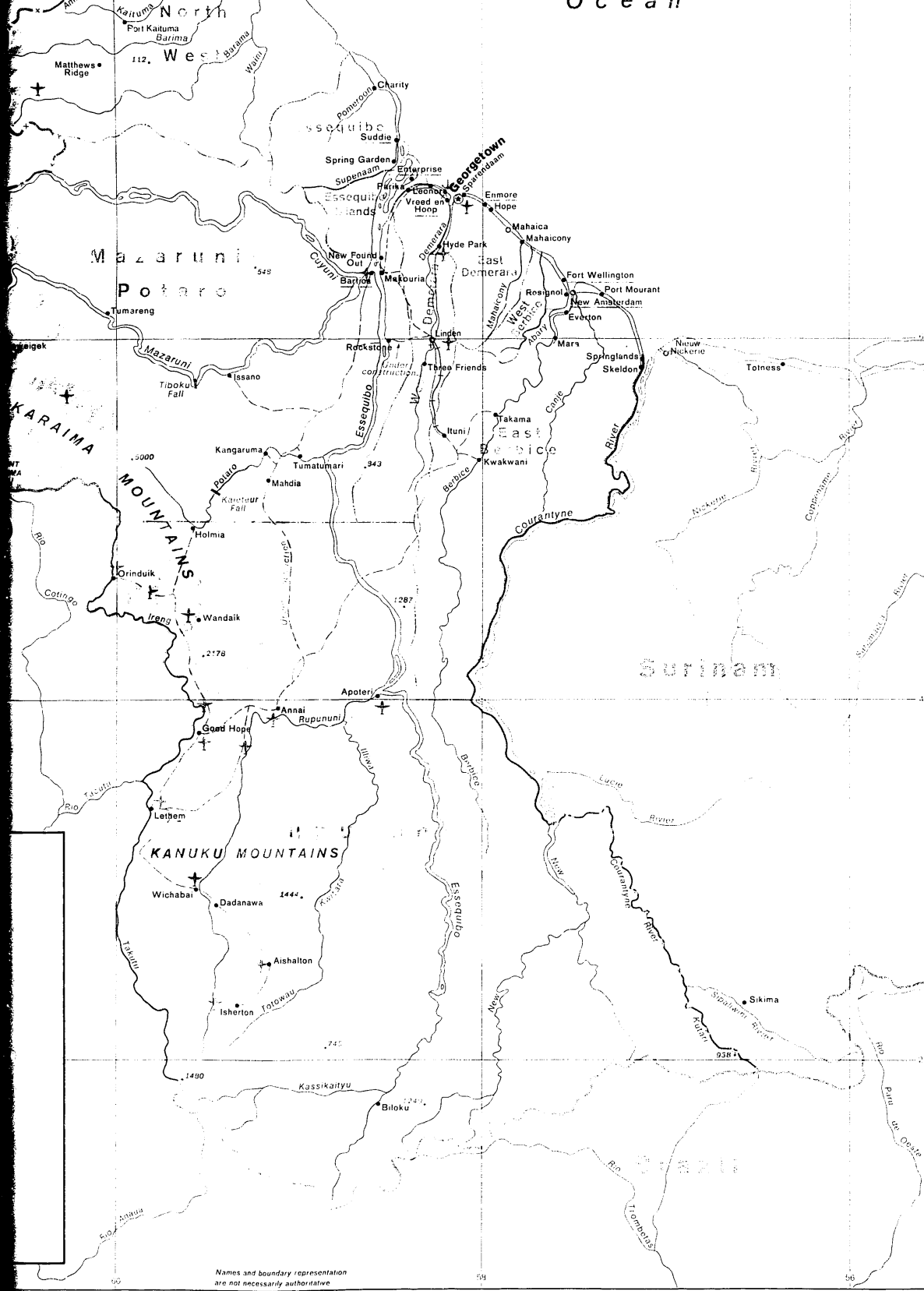


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Terrain and Transportation Figure 5